

## REMARKS

This paper is presented in response to the non-final official action dated May 13, 2008, wherein:

- (a) claims 1, 2, 4, 6-14, and 16-19 were pending;
- (b) claims 1, 2, 6-10, 13, 14, and 17-19 were rejected as obvious over:
  - (i) Hilton et al. U.S. Patent No. 4,140,801 ("Hilton") in view of
  - (ii) Sokolsky et al. U.S. Patent No. 1,676,166 ("Sokolsky"),
  - (iii) Champagnat U.S. Patent No. 3,193,390 ("Champagnat"),
  - (iv) Green al. U.S. Patent No. 3,891,771 ("Green"),
  - (v) Christ al. U.S. Patent No. 4,242,361 ("Christ"),
  - (vi) Annuk et al. U.S. Patent No. 5,316,776 ("Annuk"),
  - (vii) Howe et al. "Yeast Media, Solutions, and Stocks" (1991) ("Howe"),
  - (viii) *Catalog of Bacteria and Bacteriophages* (1992), and
  - (ix) Lund "Detection of Microorganisms in Food" (2000) ("Lund");
- (c) claim 4 was rejected as obvious over the references of (b), further in view of:
  - (i) "Yeast Fermentation" (1999), and
  - (ii) "How to Restart a Stuck Fermentation" (2007);
- (d) claims 4, 11, 12, and 16 were rejected as obvious over the references of (b), further in view of:
  - (i) Baldwin U.S. Patent No. 2,744,017 ("Baldwin"),
  - (ii) Bechtle U.S. Patent No. 3,818,109 ("Bechtle"),
  - (iii) Hagiwara U.S. Patent No. 4,298,620 ("Hagiwara"),
  - (iv) "Fermented Fruits and Vegetables, A Global Perspective" (1998),
  - (v) "Lactic Acid Bacteria" (2001),
  - (vi) "Microbiology and Bacteriology" (2006), and
  - (vii) The applicant's alleged admissions of prior art; and
- (e) claims 1, 2, 4, 6,-14 and 16-19 were rejected as indefinite.

This amendment is accompanied by a Rule 132 Declaration of Aziz C. Awad (the "Awad Declaration") providing facts relevant to the outstanding rejections.

Reconsideration and withdrawal of the rejections are respectfully requested in view of the foregoing amendments and following remarks.

## **I. Brief Summary of the Amendments to the Claims**

Claim 1 has been amended to recite that the aqueous medium in the fermenter is a fluid aqueous medium. Support for this amendment may be found, for example, in the specification at ¶ 21, ¶ 26, and Figure 2 (describing and illustrating an aqueous medium that is fluid and mixed/agitated by the pumped recirculation of the aqueous medium); ¶ 32, ¶ 33, and Figure 3 (describing and illustrating an aqueous medium that is fluid and mixed/agitated by an impeller in the aqueous medium); and Examples 1-6 (performing experiments in which 100 g of raw, uncooked processed food is added to 500 ml water containing yeast extract and a fermentation microorganism).

Claims 1, 2, 4, 6, 7, 10-13, and 19 additionally have been amended for clarity and to address the outstanding indefiniteness rejection. In view of the foregoing amendments, the applicant submits that the pending claims are sufficiently clear. Accordingly, the applicant further requests reconsideration and withdrawal of the indefiniteness rejection.

New claim 20 is based on current claim 1, but recites that the aqueous medium in step (a) has a pH between about 4 and 5, support for which may be found, for example, in ¶ 30 (Example 5) of the specification (testing the amount of acrylamide reduction in fried potato chips at pH values between 4 and 8, and further identifying the highest acrylamide reduction at pH 4 and 5). New claims 21-25 are similarly based on current claims 8, 19, 10, 12, and 16, respectively.

New claims 26-31 recite that the raw, uncooked processed food of step (a) comprises 0.1 wt.% or less of a particular sugar (e.g., glucose, fructose), support for which may be found at ¶ 22 and Table 1 of the specification.

By these amendments, there are 34 total claims (including multiple dependencies) and 4 independent claims, which totals are in excess of the 32 total claims and 1 independent claim as originally filed. Accordingly, the additional claims fee of \$155 under 37 CFR § 1.16(h) and 37 CFR § 1.16(h) is enclosed. Additional fees may be charged to our deposit account 13-0610 under order number Awad-George 4.1-7.

## **II. Disclosure of the Applied References**

The pending claims were variously rejected over Hilton in view of a variety of other references, the relevant disclosures of which are addressed below.

**A. Hilton et al. U.S. Patent No. 4,140,801**

Hilton is generally directed to a process for making potato products, in particular for the preparation of potato products having improved color characteristics upon frying (i.e., reduced browning), where the products are based on high reducing sugar-content potatoes. Hilton, 1:6-9. In general, the potatoes are first fermented to reduce their sugar content, and then the potatoes are dehydrated for storage until subsequent rehydration and frying. *Id.*, 1:9-17. The pre-dehydration reduction of sugar content reduces the yeasty taste of the final potato product, as compared to products that are fermented post-dehydration. *Id.* 1:17-22.

The starting potatoes have a high reducing sugar content, ranging from at least 1 wt.% up to 7 wt.%. *Id.* 2:37-43. The potatoes are subdivided to allow effective mixing with the fermentation yeast, for example by slicing and subsequently mashing the potatoes. *Id.* 2:44-53. After preliminary slicing, the potatoes are washed (e.g., with water) and blanched with hot water/steam to gelatinize a substantial portion of the potato starch. *Id.* 2:57-65, 7:17-20.

The mixture of potato solids to be fermented has a total moisture content up to 90 wt.%, including both free and combined moisture. *Id.* 3:9-17. Preferably, the moisture content ranges from about 75 wt.% to 85 wt.%, which simply represents the natural water content of the initial raw potatoes. *Id.* 3:18-24. The fermentation yeast is added to the fermentation medium as an aqueous slurry such that the yeast content of the fermentation medium ranges from about 0.1 wt.% to 1 wt.% on a solids basis. *Id.* 3:35-45. The potato solids are then fermented to reduce the sugar content (e.g., for at least 0.5 hr to reduce the sugar content preferably to a value of about 0.2 wt.% or less). *Id.* 3:51-60. The potato solids are then dried, for example forming potato flakes. *Id.* 4:15-17 and 4:25-27.

Hilton presents Examples I-V illustrating its disclosed process. See generally *id.*, 7:7-10:52. Potatoes having a range of initial reducing sugar contents were fermented, in particular ranging from about 1.4 wt.% to 6.3 wt.% (Example V), more commonly ranging from about 2 wt.% to 3 wt.% (Examples I-IV). The reducing sugars included glucose and fructose, and the initial glucose:fructose ratio ranged from about 1:1 (Example IV) to about 5:1 (Example III). Raw potatoes were sliced, dipped in a NaHSO<sub>3</sub> solution, blanched with steam, water-washed to remove excess starch, and then mashed in a meat grinder. *Id.*, 7:8-23. The mashed potatoes had a moisture content of about 80 wt.% and were combined with a 20 wt.% aqueous slurry

of baker's yeast to provide 0.3 wt.% yeast on a solids basis, thereby forming a fermentation mixture also having a moisture content of about 80 wt.%.<sup>1</sup> *Id.*, 7:26-29.

**B. Sokolsky et al. U.S. Patent No. 1,676,166**

Sokolsky is generally directed to a process for providing a casein-based food product. Specifically, a spongy, coagulated casein curd is separated from its corresponding whey by draining, and the spongy curd is then washed with water to remove residual bacteria and other milk components. Sokolsky, 1:23-46.

**C. Baldwin U.S. Patent No. 2,744,017**

Baldwin is generally directed to the enzymatic removal of sugars from food products, and is cited for its disclosure that lactic acid bacteria fermentation has been used address Maillard browning reactions. Baldwin, 1:27-45.

**D. Champagnat U.S. Patent No. 3,193,390**

Champagnat is generally directed to the production of yeasts. The disclosed process produces food yeasts in a nutrient medium having a paraffinic feedstock. Champagnat, 1:26-29. A disclosed medium includes: yeast extract, water, n-hexadecane as the paraffinic nutrient, and other components. *Id.*, 3:20-38.

**E. Bechtle U.S. Patent No. 3,818,109**

Bechtle is generally directed to the conversion of whey solids to an edible yeast cell mass. Lactose-containing whey is converted with two or more bacterial species from *Lactobacillus*, *Streptococcus*, and *Leuconostoc*. Bechtle, 5:39-47. The initial fermentation pH ranges from 4.9 to 5.9, and is usually above 5.0. *Id.*, 7:36-44. Accumulation of lactic acid during fermentation results in an inhibitory, minimum pH ranging from 4.4 to 4.9, but eventual consumption of the lactic acid results in a final pH above 6.0 (e.g., 6.5-8.5). *Id.*, 8:56-9:15.

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<sup>1</sup> On a 100 lb-basis, the raw potatoes contained 20 lb potato solids and 80 lb water contained/bound within the potato solids. Thus, 0.06 lb yeast was required to yield 0.3 wt.% yeast on solids basis (i.e., combined weight of potato solids and yeast). Accordingly, 0.3 lb of the 20%-yeast slurry was added to the mashed potatoes, thereby adding an additional 0.24 lb water to the potatoes. Therefore, the fermentation mixture contained 80.24 lb water (i.e., 80 wt.% water compared to the total mixture weight of 100.3 lb), the vast majority of which was contained/bound within the potato solids (i.e., 80 lb/80.24 lb, or about 99.7 wt.%).

**F. Green al. U.S. Patent No. 3,891,771**

Green is generally directed to a method for manufacturing fermented vegetable products, in particular the manufacture of pickles by the fermentation of cucumbers. Green, 1:3-6. The method is performed in a vessel having a foraminous screen at the base of the vessel and having a recirculation line at the bottom of the vessel to recirculate the liquid contents of the vessel. *Id.*, 2:63-3:7 and Fig. 2.

**G. Christ al. U.S. Patent No. 4,242,361**

Christ is generally directed to a process for preparing sauerkraut. In the disclosed method, liquid is recycled from the bottom of a fermentation vessel to the top of the vessel to prevent dehydration of the fermenting sauerkraut. Christ, abstract and Figs. 1-3.

**H. Hagiwara U.S. Patent No. 4,298,620**

Hagiwara is generally directed to a tear grass fermentation product of a *Lactobacillus* strain. A water extract of tear grass is fermented with the *Lactobacillus* strain at an initial pH ranging from about 4-6 and a final pH ranging from about 3-4. Hagiwara, 4:53-60.

**I. Annuk et al. U.S. Patent No. 5,316,776**

Annuk is generally directed to a fermentation method, and is cited by the action for the agitation of a fermentation medium. Annuk, 10:52-56 and Fig. 3.

**J. *Catalog of Bacteria and Bacteriophages***

The catalog generally discloses various media formulations. The two formulations cited by the office action include (1) yeast extract, water, skim milk, and tomato juice (pH 7.0), and (2) yeast extract, water, glucose, and other components (pH 6.3). Catalog, p. 415 (medium #17) and p. 452 (medium #1006).

**K. “Fermented Fruits and Vegetables”**

This web reference is generally related to bacterial fermentations and is cited for its disclosure that lactic acid bacteria are used for sauerkraut fermentation. Fermented Fruits and Vegetables, section 5.6.2.

**L. “Lactic Acid Bacteria”**

This web reference is cited for its disclosure that the pH of a lactic acid fermentation can drop to values as low as 4.0. Lactic Acid Bacteria, p. 1.

**M. “Yeast Media, Solutions, and Stocks”**

This web reference discloses a yeast-growth medium including: yeast extract, water, glucose, and peptone (pH 5.8). Yeast Media, p. 2-3.

**III. The 35 USC § 103(a) Rejections Are Traversed**

Claims 1, 2, 4, 6-14, and 16-19 were rejected as obvious over Hilton as the primary reference in view of various other supporting references. See p. 3-13 of the action. The applicant traverses the obviousness rejections as set forth below.

**A. Proper Basis for an Obviousness Rejection**

The PTO bears the initial burden of presenting a *prima facie* case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992); *see also* MPEP § 2142 (8th ed., rev. 6, September 2007). A *prima facie* case of obviousness requires that each and every limitation of the claim is described or suggested by the prior art, or would have been obvious based on the knowledge of those of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 1074 (Fed. Cir. 1988). Further, “rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). Additionally, a *prima facie* case of obviousness based on a combination of prior art elements requires that the results of the combination would have been predictable. MPEP § 2143(A). Thus, any analysis supporting an obviousness rejection should be made explicit and should “identify a reason that would have prompted a person of ordinary skill in the art to combine the elements” in the manner claimed. *KSR Int’l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727, 1739 (2007).

Even though a conclusion of obviousness “is in a sense necessarily a reconstruction based on hindsight reasoning,” MPEP § 2145(X)(A) (citing *In re McLaughlin*, 443 F.2d 1392, 1395 (CCPA 1971)), there are limits to its application. Specifically, hindsight reconstruction of a claimed invention *using the applicant’s disclosure as a template* is impermissible and represents an insufficient basis to support a *prima facie* case of obviousness. The likelihood of impermissible hindsight increases along with the number and/or complexity of the claimed features asserted to be obvious. *See Ortho-McNeil Pharmaceutical, Inc. v. Mylan Laboratories, Inc.*, 520 F.3d 1358, 1364 (Fed. Cir. 2008) (explaining that “simply retrac[ing] the path of the inventor with hindsight, discount[ing] the number and complexity of

alternatives ... is *always inappropriate* for an obviousness test" (emphasis added)). For instance, "one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention." *In re Fine*, 837 F.2d 1071, 1075 (Fed. Cir. 1988).

## **B. Lack of a *Prima Facie* Case of Obviousness**

The applicant submits that a prima facie case of obviousness does not exist for the various claims and reasons set forth below. Accordingly, the applicant respectfully requests reconsideration and withdrawal of the obviousness rejections.

### **1. Fluid Aqueous Medium Limitation**

Independent claim 1 recites a fermenter containing a fluid aqueous medium and further that the aqueous medium is agitated in the fermenter.

Hilton discloses a mashed potato matrix as a fermentation medium that is not a fluid aqueous medium.<sup>2</sup> See Awad Declaration, ¶ [0013]. Hilton's potato solids to be fermented have a total moisture content up to 90 wt.%; however, this high moisture content represents the natural water content of the initial raw potatoes. See Section II.A above. There is no substantial amount of free water (i.e., water not absorbed or otherwise bound within the potato solids) capable of forming a fluid aqueous medium that can be agitated in the fermenter. The addition of yeast to the potato solids of Hilton does not change the non-fluid character of the fermentation medium, even though the yeast is added in the form of an aqueous slurry. Specifically, the yeast is added to the potato solids in such a small amount that the additional water from the yeast slurry is insufficient to form a fluid medium. See *id.* (analyzing the examples of Hilton and determining that 99.7 wt.% of the water content of the fermentation medium is bound within the mashed potato solids). Even though Hilton describes its fermentation medium as "aqueous in nature" (Hilton, 3:35-36), it is apparent from the context of Hilton that the "aqueous" label is based on the high natural water content of potatoes in general. However, the high natural water content is bound within the potatoes and incapable of forming a *fluid aqueous medium* as recited.

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<sup>2</sup> The applicant further submits that Hilton's fermentation medium is not an aqueous medium (i.e., as recited in the other independent claims). In any event, Hilton fails to disclose, teach, or suggest an aqueous fermentation medium that is fluid or otherwise capable of flowing.

The remaining applied references do not alter this aspect of Hilton's disclosure or otherwise remedy the deficiencies of Hilton. Accordingly, the applied references fail to teach or suggest all recited limitations, and there can be no *prima face* case of obviousness. *In re Fine*, 837 F.2d at 1074.

## **2. Yeast Extract Limitation**

Independent claims 1, 20, 28, and 29 recite an aqueous medium comprising (i) a microorganism used for food fermentations for metabolizing sugars in an uncooked processed food and (ii) yeast extract for fermentation by the microorganism. Further, no additional sugars are added to the processed food in the recited process steps.

The office action asserts that it would have been obvious to add a yeast extract to the system of Hilton to provide a nutrient source for Hilton's microorganisms, based in part on the assertion that "it has been well known to the ordinarily skilled artisan that yeast and other microorganisms require nutrients in order to ferment a food." See p. 6 of action.

Hilton, however, uses potatoes having an initially high reducing sugar content of at least 1 wt.%, more commonly ranging from about 2 wt.% to 3 wt.%. See Section II.A above. Thus, there would have been no reason to add a second nutrient source (i.e., the yeast extract) in addition to the pre-existing nutrient source (i.e., natural sugar content of the potatoes), in particular because the applied references do not recognize the desirability of reducing components other than sugar (e.g., asparagine and acrylamide). Awad Declaration, ¶ [0006]. Specifically, within the context of Hilton and the other applied references, the fermentation need only take place as long as available sugars are present. *Id.* Further, the addition of yeast extract to Hilton could have been counterproductive, possibly limiting the rate of sugar reduction by Hilton's yeast due to the presence of a competing nutrient source (i.e., the yeast extract in addition to the natural reducing sugar content). *Id.* Thus, there is no reason to modify the applied combination of references to arrive at the recited addition of yeast extract. *KSR*, 127 S.Ct. at 1739. Further, the applicant submits that the office action's reliance on isolated disclosures of yeast extract and discounting of the chemical constituents of Hilton's base fermentation system represents impermissible hindsight reconstruction of the claimed processes. *In re Fine*, 837 F.2d at 1075.



Additionally, the applied references generally disclose the use of a yeast extract in combination with other nutrients, in particular sugars. Awad Declaration, ¶ [0007], Sections II.J and II.M above. The addition of supplemental sugar sources (e.g., outside of the natural sugar content of the raw food and the yeast extract) is contrary to the recitation that no sugars are added to the processed food. Accordingly, the applied references, even if combined as proposed in the action, fail to teach or suggest all recited limitations, and there can be no *prima face* case of obviousness. *In re Fine*, 837 F.2d at 1074.

Accordingly, the applicant submits that the foregoing represents a sufficient basis to withdraw the obviousness rejection of all pending claims, all of which recite the yeast extract.

### **3. Acrylamide Reduction Limitation**

Independent claims 1, 20, 28, and 29 recite that the baked or fried fermented food resulting from the claimed processes contains less acrylamide than without the fermentation.

The office action asserts that “by reducing one of the reactants, such as the reducing sugars, Hilton et al. inherently teach the reduction of the formation of acrylamide.” Further, the action asserts that acrylamide reduction would have been obvious “since Hilton et al. teach that upon frying the potato product has reduced browning and since the Maillard reaction ... would have been limited as a result of lower the amount of one of the reactants.” See p. 4-5 of the action.

Thus, the office action is based on the conclusion that the reduction of acrylamide is directly correlated to the reduction in browning observed in Hilton. However, this is not the case, because the absence of browning does not imply the absence of acrylamide formation. Awad Declaration, ¶ [0003]. Specifically, the application examples indicate that acrylamide reduction can vary significantly (e.g., based on pH) even where the reducing sugar level is low and no browning is observed. *Id.* Commercially available potato chips similarly illustrate this effect. See *id.*, ¶ [0004] (indicating that non-browned potato chips nonetheless have substantial and highly variable acrylamide contents).

Accordingly, the applicant submits that the foregoing represents an additional, sufficient basis to withdraw the obviousness rejection of all pending claims, all of which recite acrylamide reduction.

#### 4. Washing and Outlet Strainer Limitations

Independent claims 1 and 20 recite a fermenter with an outlet strainer and further washing the uncooked processed food from step (c) in the fermenter by introducing water to remove residues on the uncooked processed food from the fermentation through the outlet strainer.

The action relies on the teaching of Sokolsky to conclude that it would have been obvious to wash the fermented food product of Hilton. See p. 8 of the action.

However, it is not possible to wash the fermented food product of Hilton, because Hilton uses *blanched mashed potatoes*. Specifically, the fermented potato matrix of Hilton will not permit washing because of its mashed, dough-like consistency. See Section II.A and Awad Declaration, ¶ [0013]. In contrast, the spongy curd matrix of Sokolsky is amenable to washing because of its porous nature, which allows a washing fluid to flow through the matrix with a high surface contact area. Thus, even assuming that the skilled artisan would be motivated to incorporate the washing step of Sokolsky into the method of Hilton, there is no expectation that such a washing step would be effective or even possible.

The action relies on the teaching of Green to conclude that it would have been obvious to add an outlet strainer to the apparatus and process of Hilton. See p. 7 of the action.

However, an outlet strainer would have been ineffective or counter-productive in the apparatus of Hilton for the reasons above related to washing. Namely, the mashed potato matrix of Hilton would likely either plug the outlet strainer or be forced through the strainer along with the washing fluid (i.e., depending on the size of the strainer orifices and the flow rate of the washing fluid). In any event, an outlet strainer added to the apparatus of Hilton would not have the desired effect of retaining the fermented food product while permitting the washing fluid to pass through the outlet strainer.

Thus, the skilled artisan would not have reasonably predicted that a washing step or an outlet strainer could be successfully implemented into the Hilton process, and there can be no *prima facie* case of obviousness. MPEP § 2143(A).

#### 5. Microorganism Recycling Limitation

Dependent claim 13 recites that the microorganism is recycled *between batches* of the uncooked processed food which are processed in the fermenter.

The action relies on the teaching of Christ to conclude that it would have been recycle the fermentation yeast from the process of Hilton. See p. 9 of the action.

Christ, however, recycles the liquid and the microorganisms within the *same batch* and not *between* successive batches as recited. Thus, even if combined as proposed in the action, the applied references fail teach or suggest all recited limitations, and there can be no *prima facie* case of obviousness for claim 13. *In re Fine*, 837 F.2d at 1074. Further, Christ's recycling simply prevents dehydration of the material being fermented, so there is no reason to modify the applied combination of references to arrive at the recited feature. *KSR*, 127 S.Ct. at 1739.

#### **6. Saccharide Concentration of Raw Food**

New claims 26-31 recite that the raw, uncooked processed food added to the fermenter in the process step (a) alternatively comprise less than 0.1 wt.% fructose, less than 0.1 wt.% glucose, or a combination thereof.

Hilton is explicitly directed to the fermentation of high reducing sugar-content potatoes. The starting potatoes have a reducing sugar content of at least 1 wt.%, where the reducing sugar has a glucose:fructose ratio ranging from about 1:1 to about 5:1, and the final reducing sugar content is preferably less than about 0.2 wt.%. See Section II.A above. Thus, the starting potatoes have an initial glucose content of at least about 0.5 wt.% to about 0.83 wt.% and an initial fructose content of at least about 0.17 wt.% to about 0.5 wt.%. The other applied references do not remedy the deficiencies of Hilton, or otherwise suggest raw, uncooked processed food having the recited saccharide contents. Further, there is no reason that the skilled artisan would modify the process of Hilton to simultaneously (1) begin its process with low-sugar potatoes and (2) still ferment the low-sugar potatoes, inasmuch as the recited saccharide contents are already below Hilton's most preferred final reducing sugar content of about 0.2 wt.% or less.

Thus, the applied references fail to teach or suggest all recited limitations. *In re Fine*, 837 F.2d at 1074. Further, there is no reason that the skilled artisan would have combined the elements in the applied references in the manner claimed. *KSR*, 127 S.Ct. at 1739. Accordingly, the applicant submits that there is no *prima facie* case of obviousness for claims 26-31 and that the claims are allowable for both of these independent reasons.

**C. Objective Evidence of Non-Obviousness**

Claims 4, 16, 20, and 25 recite a pH between about 4 and 5 for the aqueous medium, either in the initial or final fermentation medium.

Notwithstanding the foregoing discussion regarding the lack of a *prima facie* case of obviousness, the applicant further submits that claims 4, 16, 20, and 25 are allowable on the basis of objective evidence of non-obviousness in the form of comparative data present in the application specification.

The application specification presents acrylamide reduction data for fermented and fried foods prepared according to the recited processes. Example 5 illustrates that the acrylamide reduction at pH values of 4 and 5 is substantially higher than at pH values from 6 to 8. Specification, ¶ 30 (Tables 8 and 9). The benefit of using a lower pH was demonstrated to be applicable to different types of microorganisms, including yeast and bacterial cells. *Id.* Similarly, substantial acrylamide reduction was observed in a variety of starch-based processed foods, including potato chips, processed cereal mix, and corn tortilla chip masa. *Id.*, ¶ 32 (Example 6, Table 10). The superior acrylamide reduction at lower pH values was unexpected, inasmuch as the optimal pH for microbial growth of the microorganisms tested was higher: pH of 6 to 7. *Id.*, ¶ 31; Awad Declaration, ¶ [0008] and ¶ [0011]. The higher pH values are optimum for the fermentation growth of microorganisms; even if some microorganisms are capable of surviving at a lower pH, the lower pH is generally inhibitory for bacterial growth and would not have been expected to result in superior acrylamide reduction. Awad Declaration, ¶ [0008]. This indicates that a low pH has an independent effect on the reduction of acrylamide regardless of the presence and/or disappearance of acrylamide precursors (e.g., mono- and di-saccharides, which are reactants of the Maillard reaction), further illustrating that acrylamide formation cannot be fully explained by the Maillard reaction and that some other mechanism probably operates to reduce acrylamide. *Id.*, ¶ [0011]. Thus, the acrylamide reduction at pH values between about 4 and 5 is both substantial and unexpected, given that the low-pH optimum could not have been predicted on the basis of the skilled artisan's knowledge.

Further, the identification of the recited range of pH values between about 4 and 5 would not have been a matter of routine optimization. Only result-effective variables can be optimized. MPEP § 2144.05(II)(B). Specifically, a particular parameter must first be recognized as a result-effective variable (i.e., a variable

which achieves a recognized result) before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618 (CCPA 1977). In this case, the applied references fail to even indicate the desirability of limiting acrylamide formation in a baked or fried food. Even assuming the desirability of limiting acrylamide, however, there is likewise nothing in the applied references suggesting the pH is a result-effective variable for acrylamide reduction. Accordingly, the skilled artisan would not have been able to identify the lower recited pH range as a simple matter of routine optimization.

Accordingly, the applicant submits that the foregoing represents a sufficient demonstration of unexpected results for the processes of claims 4, 16, 20, and 25.

#### **IV. Non-Availability of Applied References**

Claims 4, 11, 12, and 16 were rejected as obvious over a combination of references, in part relying on a web article entitled "How to Restart a Stuck Fermentation" and a web textbook entitled "Microbiology and Bacteriology." See office action, p. 10-11.

Disclosures on the Internet or can qualify as prior art under 35 USC § 102(a) or (b); however, they are considered to be publicly available as of the date the item was publicly posted. MPEP § 2128. Absent evidence of the date that the disclosure was publicly posted, if the publication itself does not include a publication date (or retrieval date), it cannot be relied upon as prior art under. *Id.*

The action asserts that the publication date of "How to Restart a Stuck Fermentation" is 1999, but does not assert any publication date for "Microbiology and Bacteriology." See office action, "Notice of References Cited" section.

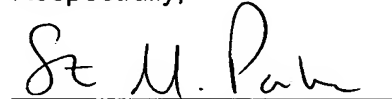
Neither of the web references, however, is available before 2006. Given the 2003 filing date of the present application, neither web reference qualifies as prior art. Specifically, "How to Restart a Stuck Fermentation" provides a copyright notice of 1999-2007. Similarly, while the copy of "Microbiology and Bacteriology" provided by the action provides no indication of publication, a copy of the cited textbook section accessed by the applicant provides a copyright notice of 1999-2006 (copy enclosed). Absent any evidence regarding which portions of the disclosures were originally available in 1999 and which portions were subsequently added, the applicant submits that the two web references do not have availability dates before 2007 and 2006, respectively.

Accordingly, the applicant requests reconsideration and withdrawal of the rejections of claims 4, 11, 12, and 16 for this additional reason.

### CONCLUSION

In view of the foregoing, entry of amendments to claims 1, 2, 4, 6, 7, 10-13, and 19, entry of new claims 20-32, reconsideration and withdrawal of the rejections, and allowance of all pending claims are respectfully requested.

Respectfully,

A handwritten signature in black ink, appearing to read "St M. Parks", written over a horizontal line.

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